



RESEARCH ON NEW TEACHING MODE FOR COMPUTER COURSES

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ABSTRACT

The number of skilled senior talents who can develop it is less, which leads to the serious break between the rapid development of science and technology and the stagnation of talent training. By investigating and reforming the current teaching mode in Colleges and universities, we find that the simplification of teaching mode, the emphasis on theory and the neglect of practice make it difficult for students to understand and apply Abstract knowledge, and fail to meet the training standard of high-tech talents. Therefore, the project-driven teaching mode is put forward, and more practical ability is added to the teaching. In this way, the tedious theoretical lesson sitting and listening can be turned into a flexible practical exchange course, so as to improve the quality of teaching, realize the application of learning, finally realize the cultivation of Technical Senior talents, and do a good job of linking up the development of science and technology with the cultivation of talents.

KEYWORDS: Computer Talent Training; Project-Driven Teaching Method; Practical Application.

INTRODUCTION:

In the training of talents, more and more people are aware of the importance of education, and have carried out many reforms in different aspects and degrees. It is worth mentioning that the CAI (Computer-Assisted Instruction) system[1-3] in the United States entered the field of education in the late 1980s, making it an ideal tool in a variety of educational environments and popularized in subsequent teaching. Although it has changed the traditional teaching mode and introduced some new teaching tools, such as LCD projection, to enrich the teaching methods and change the student's learning attitude. However, it is still centered on theoretical teaching, which is to infuse students with theoretical knowledge in another way. Without fundamentally and substantially improving the quality of teaching and student's practical operation ability, it is not conducive to the cultivation of talents. We should continue to reform the educational model and put forward the project-driven education method.

SURVEY OF CURRENT SITUATION:

Although the development of software engineering and computer science is very fast in recent years, the training of computer talents has fallen into a standstill in many countries, resulting in a serious disconnection between the development of computer science and the training of computer engineering talents[4,5].

In the late 1980s (the second stage of CAI development), people began to realize the importance of teaching theory (especially instructional design theory) to CAI courseware development, and gradually consciously applied instructional design theory as the guiding ideology of CAI courseware script design. However, the traditional theory of instructional design was still used at that time. Its characteristics were still teacher-centered. It only emphasized the "teaching" of teachers, but ignored the "learning" of students. All instructional design theories focused on how to "teach", and seldom involved the "learning" of students. Classroom teaching designed according to this theory has fewer opportunities for students to participate in teaching activities, and most of the time is in a passive state of acceptance. In the long run, students will think that the programming course is very boring and profound, which will eventually lead to students losing interest in the course and generating boredom[6-8]. The initiative and enthusiasm of students are difficult to play, which is not conducive to the growth of creative talents. The CAI courseware designed according to this theory also has the same disadvantages. Student's ability to apply knowledge is not strong, facing the rapid development of engineering computers cannot reach a comfortable height, so they have to reform the current education model to make it meet the needs of the times and provide the corresponding scientific and technological talents for social development.

The so-called project-driven method is student-centered. Teachers act as helpers to guide students to acquire knowledge. Through the completion of the "project" process as a teaching method. Teachers provide a specific image of the "project" through the collation of knowledge, requiring students to submit their knowledge through the completion of the study. The knowledge points in the "project" need not be complicated, but can be planned according to the educational curriculum, involving some key points of knowledge. In this process, students can combine theory with practice teaching organically through the help of teachers and classmates, or with the help of necessary learning materials and teaching resources, through active acquisition of knowledge, which can cultivate student's autonomous learning ability[9,10], practical ability[11,12], teamwork

ability[13-14], creativity, abstract logical thinking ability, etc.

According to the survey, when college students embark on the road of employment, after contacting the actual work cases, in a short period of time, their working ability and practical knowledge application level will be greatly improved. Only at this time can the knowledge acquired in school be closely related to work practice. In a sense, college students really enter the classroom at this time.

In fact, at the job fairs, the students trained by vocational and technical colleges in society are more recognized by employers than the graduates of some comprehensive universities. Vocational and technical institutes have special curriculum settings, which are based on the actual needs of society, and train talents according to the requirements of the market. Therefore, compared with other institutes, students trained in this way can integrate into social work more quickly and easily. This is precisely because colleges and universities adopt traditional teaching methods, so that students can passively learn, can follow the cat and draw tigers to knock through the procedures of examples in books, can also complete similar topics with examples, but when the difficulty of the procedures is increased out of books, we do not know what to do.

ANALYSIS OF CURRENT SITUATION:

In the teaching of computer engineering, improving the practical ability of college students should be an important goal of the construction of teaching courses in Colleges and universities. In view of the lack of practical ability of College students, some teaching reforms have been carried out in Colleges and universities, such as improving the credit ratio of computer experiments, multi-course joint teaching, organizing extracurricular scientific and technological activities, and some results have been achieved. However, it is difficult to achieve the teaching objectives fundamentally, which determines that these teaching modes have considerable limitations in terms of teaching means.

Therefore, the reform of practical teaching in Colleges and universities has become inevitable. In addition to introducing some basic knowledge content of computer science and inculcating concepts and nouns, the teaching of computer course should also put the improvement of student's practical ability in the first place. Conventional teaching and experiment have the same characteristics: from beginning to end, the whole process focuses on the nature of research, only requires students to verify what they have learned, and it is difficult to really improve student's practical ability. This kind of teaching mode will make the original interesting and wonderful curriculum lose its original elegance, not conducive to the cultivation of student's interest in learning, but also to the cultivation and improvement of students' abstract thinking and innovation ability. So we introduce the student-centered project-driven approach.

OUR METHODS:

Project-driven teaching method is a new teaching method in the field of education. In recent years, most colleges and universities have begun to absorb and practice this teaching method. Aiming at the principle of training high-quality and skilled professionals with "common use, top use and easy use", combining with the project-driven teaching mode of curriculum, taking the qualitative education research method as the guiding ideology, we constantly obtain and study the feedback information of students, constantly revise the teaching content and methods, and truly embody the educational concept of "teaching according to aptitude". At the same time, improve student's participation and systematic con-

cept, lay a good practical foundation for future employment.

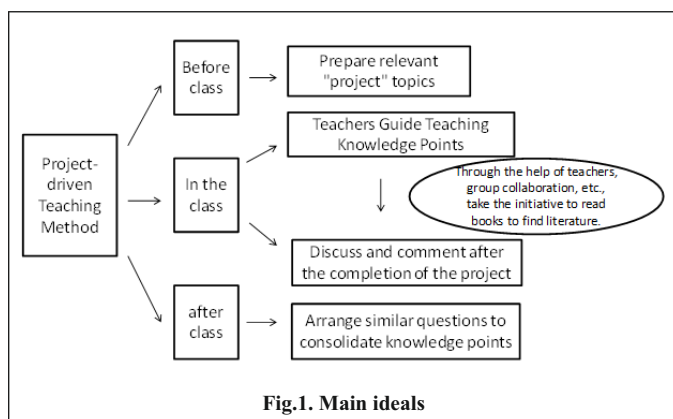
Before the beginning of the class, teachers should prepare relevant "projects" in advance. However, due to the weakness of student's basic knowledge, this project should not involve too many knowledge points, and should adopt a step-by-step approach to design software development projects. If the project is too complicated, it will dissipate student's interest in learning and self-confidence, but have a negative impact. Therefore, teachers should be able to propose projects that meet the teaching objectives and attract student's interest in learning.

In the classroom instruction, teachers can guide students according to the main concepts, needs analysis, overall design, outline design and related knowledge points involved in the project, so that students who just took over the project can have a certain starting point in the initial stage, and the brain can draw out some key words and so on. At the same time, students can be encouraged to cooperate with each other to complete the project in groups, or provide some searchable websites and documents for students to complete the project in a feasible way.

After completing the project in the later stage, the teacher should make a detailed analysis and comment on the completion of the students. Some of the student's homework can be extracted to give lectures in class, to stimulate students to discuss together, the good and bad parts of the homework, and how to improve some of the more enthusiastic links. At the same time, in this process, teachers also need to emphasize in detail the error-prone areas in the knowledge points, arouse student's thinking, see if it is reflected in their homework, etc. But in the end, praise and encouragement should be given to students to increase their sense of achievement.

After class, we can arrange subjects which are comparable to the difficulty of the project. As the consolidation link of knowledge points, we can also modify and improve a series of problems existing in the previous project, so that students can master this part of knowledge skillfully, and lay a good foundation for the next study, because knowledge is linked to a certain extent. At the same time, it can also improve student's satisfaction and achievement, and then generate more intense interest in learning.

The main ideal of our scheme is shown in Fig. 1.



ADVANTAGES:

In traditional education methods, teachers can read and understand classroom contents in advance according to the order of books by referring to the corresponding chapters and courseware of teacher's books and network. In class, according to the pre-planned teaching steps, the knowledge points are explained in detail in the form of a section or a chapter. After class, the paper assignments or similar assignments with examples are arranged, and the next section is continued. Students do not have a sense of participation and enthusiasm in the classroom under this fixed pattern, they are bored with abstract knowledge, teacher's teaching is limited by books, they are not related to the connection of knowledge, cross-chapter explanation when necessary. And they cannot realize the flexibility of knowledge application in the actual background environment. We should let the knowledge live and let the students realize that "the knowledge in text books is always shallow, and they never know that this matter needs to be practiced".

CONCLUSION:

Implementing project-driven teaching mode is to interpose student's work cases into the process of teaching experiment after they have entered the social work practice through a certain degree of modification. To some extent, it is equivalent to allowing students to enter work practice ahead of time, giving them some work pressure, and promoting the simultaneous improvement of student's professional knowledge and practical ability. Through such means, students can learn and apply their professional knowledge in school.

Acknowledgments:

This work was supported by the education and teaching reform project of Xihua

University (xjgj2017040); the 2019 counsellor and administrative staff project of Xihua University; the Xihua motor vehicle Forensic Institute project (182017).

REFERENCES:

- [1] Cassady, J. C., Smith, L. L., & Thomas, C. L. (2018). Supporting emergent literacy for English language learners with computer-assisted instruction. *Journal of Research in Reading*, 41(2), 350-369.
- [2] Ok, M. W., Bryant, D. P., & Bryant, B. R. (2019). Effects of Computer-Assisted Instruction on the Mathematics Performance of Students with Learning Disabilities: A Synthesis of the Research. *Exceptionality*, 1-15.
- [3] Mize, M. K., Park, Y., & Moore, T. (2018). Computer-assisted vocabulary instruction for students with disabilities: Evidence from an effect size analysis of single-subject experimental design studies. *Journal of Computer Assisted Learning*, 34(6), 641-651.
- [4] Katona, J., & Kovari, A. (2016). A Brain-Computer Interface Project Applied in Computer Engineering. *IEEE Transactions on Education*, 59(4), 319-326.
- [5] Kose, U., & Arslan, A. (2017). Optimization of self-learning in Computer Engineering courses: An intelligent software system supported by Artificial Neural Network and Vortex Optimization Algorithm. *Computer Applications in Engineering Education*, 25(1), 142-156.
- [6] Dür, A., Bernhagen, P., & Marshall, D. (2015). Interest group success in the European Union: When (and why) does business lose?. *Comparative Political Studies*, 48(8), 951-983.
- [7] Bauckhage, C., Kersting, K., Sifa, R., Thureau, C., Drachen, A., & Canossa, A. (2012, September). How players lose interest in playing a game: An empirical study based on distributions of total playing times. In 2012 IEEE Conference on Computational Intelligence and Games (CIG) pp. 139-146.
- [8] Anderhag, P., WICKMAN, P. O., Bergqvist, K., Jakobson, B., Hamza, K. M., & Säljö, R. (2016). Why do secondary school students lose their interest in science? Or does it never emerge? A possible and overlooked explanation. *Science education*, 100(5), 791-813.
- [9] Kessler, G., & Bikowski, D. (2010). Developing collaborative autonomous learning abilities in computer mediated language learning: Attention to meaning among students in wiki space. *Computer Assisted Language Learning*, 23(1), 41-58.
- [10] Qingxin, J. (2006). The significance of teachers' involvement in learners' autonomous learning. *Foreign Language World*, 2, 10-15.
- [11] LI, X. P., LI, W. H., Cheng, Y., & Wang, S. Y. (2018). Study on Construction of Professional Degree Courses for Prevention and Health Care of TCM Postgraduates Based on Practical Ability. *Chinese Journal of Information on Traditional Chinese Medicine*, 25(7), 123-125.
- [12] Chen, H., & Liu, S. (2018, January). Practical Ability Training on Visualization Teaching Design Based on Information Visualization Technology. In 2018 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS) pp. 517-520.
- [13] Sridharan, B., & Boud, D. (2019). The effects of peer judgements on teamwork and self-assessment ability in collaborative group work. *Assessment & Evaluation in Higher Education*, 1-16.
- [14] Wei, L., Xiaoling, S., Xiaofeng, L., Qiaoyong, J., & Lei, W. (2018, August). Enhancing the Student Teamwork Ability and Innovation Ability in Blended Teaching. In 2018 13th International Conference on Computer Science & Education (ICCSE) pp. 1-5.
- [15] Lower, L. M., Newman, T. J., & Anderson-Butcher, D. (2017). Validity and reliability of the teamwork scale for youth. *Research on Social Work Practice*, 27(6), 716-725.